

Claims

1. Apparatus for classifying an occupant of a seat, the apparatus comprising:

a fluid-filled elastomeric seat bladder including first and second
5 peripherally sealed elastomeric sheets that deform in response to occupant weight;

a ground plane conductor film generally conforming to said first elastomeric sheet, and at least one sensor element conductor film generally conforming to said second elastomeric sheet; and

10 a controller for detecting a change in capacitance or electric field coupling between said sensor element conductor film and said ground plane conductor film as a measure of deformation of said elastomeric sheets due to occupant weight, and for classifying said occupant based on said detected change.

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2. The apparatus of Claim 1, further comprising a first pad generally conforming to an exterior surface of said first elastomeric sheet, where said ground plane conductor film is supported on said first pad.

3. The apparatus of Claim 1, further comprising a second pad generally conforming to an exterior surface of said second elastomeric sheet, where said sensor element conductor film is supported on said second pad.

4. The apparatus of Claim 1, wherein said ground plane conductor film is formed on a surface of first elastomeric sheet inside said bladder.

5. The apparatus of Claim 1, wherein said sensor element conductor film is formed on a surface of second elastomeric sheet inside said bladder.

6. The apparatus of Claim 1, wherein said ground plane conductor film is formed on a surface of first elastomeric sheet inside said bladder, said sensor element conductor film is formed on a surface of second elastomeric sheet inside said bladder, and said bladder includes a third elastomeric sheet
5 separating the ground plane and sensor element conductor films.

7. The apparatus of Claim 1, including a plurality of individual non-contiguous sensor element conductor films generally conforming to said second elastomeric sheet, where said controller detects a change in capacitance or electric field coupling between each of said sensor element conductor films and
5 said ground plane conductor film to form a profile of bladder deformation due to occupant weight, and then classifies said occupant based on said profile.

8. The apparatus of Claim 7, wherein said controller determines a capacitance or electric field coupling between said ground plane conductor film and a selected sensor element film, while electrically shorting non-selected sensor element films to said ground plane conductor film.
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9. The apparatus of Claim 8, wherein said controller selects individual sensor element films in succession.

10. The apparatus of Claim 7, further comprising a pressure sensor for measuring fluid pressure in said bladder indicative of occupant weight, wherein

said controller determines an occupant weight based on a cumulative change in capacitance or electric field coupling between said ground plane conductor film
5 and said sensor element conductor films, and compares such determined occupant weight with said measured fluid pressure to validate said profile.